

(c) The final exhaust-gas temperature at discharge from the cooling system, and before the exhaust gas is diluted with air, shall not exceed 170 °F. or the temperature of adiabatic saturation, if this temperature is lower.

(d) Water consumed in cooling the exhaust gas under the test conditions shall not exceed by more than 15 percent that required for adiabatic saturation of the exhaust-gas at the final temperature. Water in excess of that required for adiabatic saturation shall be considered as entrained water. Enough water shall be available in the cooling system or in reserve supply compartments for sustained satisfactory operation for at least 2 $\frac{1}{2}$  hours under the test conditions.

NOTE: This amount is enough to cool the exhaust for an 8-hour shift at one-third load factor.

(e) The adequacy of the automatic fuel shutoff actuated by the temperature of the final exhaust shall be determined with the engine operating under test conditions by withdrawing water until the cooling system fails to function. The final exhaust-gas temperature at which the liquid fuel to the engine is automatically shut off shall be noted. This temperature shall not exceed 185 °F.

(f) Following the automatic fuel shutoff test in paragraph (e) of this section, the temperature of the control point shall be allowed to fall to 170 °F. At this temperature and with the water replenished in the cooling system, it shall be possible to start the engine.

NOTE: If the cooling system includes a reserve supply water tank, the line or lines connecting it to the cooling compartment may require a suitable flame arrester.

(g) The effectiveness of the automatic engine shut-off, which will operate when the water in the cooling jacket(s) exceeds 212 °F., shall be determined by causing the jacket temperature to exceed 212 °F.

**§ 36.48 Tests of surface temperature of engine and components of the cooling system.**

(a) The surface temperatures of the engine, exhaust cooling system, and

other components subject to heating by engine operation shall be determined with the engine operated as prescribed by MSHA. All parts of the engine, cooling system, and other components shall have reached their respective equilibrium temperatures. The exhaust cooling system shall be operated, but air shall not be circulated over the engine or components. Surface temperatures shall be measured at various places prescribed by MSHA to determine where maximum temperatures develop.

(b) The temperature of any surface shall not exceed 400 °F.

NOTE TO § 36.48: The engine may be operated under test conditions prescribed by MSHA while completely surrounded by a flammable mixture. MSHA reserves the right to apply combustible materials to any surface for test. Operation under such conditions shall not ignite the flammable mixture.

[Sched. 31, 26 FR 645, Jan. 24, 1961, as amended at 61 FR 55526, Oct. 25, 1996]

**§ 36.49 Tests of exhaust-gas dilution system.**

The performance and adequacy of the exhaust-gas dilution system shall be determined in tests of the complete equipment. The engine, at temperature equilibrium, shall be operated in normal air as prescribed by MSHA. Samples of the undiluted exhaust gas and of the diluted exhaust gas, at location(s) prescribed by MSHA, shall be considered with the data obtained from the engine test (see § 36.43) to determine that the concentrations of carbon dioxide, carbon monoxide, oxides of nitrogen, and aldehydes in the diluted exhaust shall be below the required concentrations specified in § 36.25(f)(1).

**§ 36.50 Tests of fuel tank.**

The fuel tank shall be inspected and tested to determine whether: (a) It is fuel-tight, (b) the vent maintains atmospheric pressure within the tank, and (c) the vent and closure restrict the outflow of liquid fuel.